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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,693	06/26/2003	Hiroki Sato	SON-2780	2889

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EXAMINER	
MADDEN, GREGORY VINCENT	

ART UNIT	PAPER NUMBER
2622	

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/603,693	SATO ET AL.	
	Examiner	Art Unit	
	Gregory V. Madden	2622	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

Figure 11 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 10 are rejected under 35 U.S.C. 102(e) as being anticipated by Takayama et al. (U.S. Pat. 6,683,643).

First, in regard to **claim 1**, the Takayama reference teaches a solid-state image pickup device (electronic camera) comprising a pixel unit (CCD 1) including a plurality of unit pixels that perform photoelectric conversion, a driving circuit (driving system circuit 2) for driving the pixel unit (CCD 1) to control output of a pixel output signal, and an output signal processing circuit (signal processing section 42) for subjecting the pixel output signal outputted from the pixel unit according to the driving of the driving circuit to predetermined signal processing, and outputting the resulting pixel output signal. Further, Takayama discloses a pixel defect determining circuit (pixel defect detecting circuit 43) for capturing the pixel output signal outputted from the pixel unit according to the driving of the driving circuit, and determining a pixel defect by comparing the pixel output signal with a predetermined reference signal (stored in memory 9). While Takayama does not explicitly disclose a timing generator for supplying a predetermined operating pulse to the driving circuit, the output signal processing circuit, and the pixel defect determining circuit, it is inherent that some sort of timing pulse is sent to each of these circuits from control circuit 8 so as to operate the circuits at the correct time. Please refer to Fig. 14, Col. 10, Line 62 – Col. 11, Line 44, and Col. 24, Lines 4-23.

Considering **claim 2**, the limitations of claim 1 are taught above, and Takayama further teaches a selecting circuit (mode switch 16) for selectively operating the output signal processing circuit (42) in a normal output mode (for image capture) and the pixel defect determining circuit (43) in a defect test mode, as is shown in Fig. 14 and Col. 11, Lines 41-44.

As for **claim 3**, again the limitations of claim 1 are taught above, and Col. 10, Lines 62-67 of Takayama also discloses that the driving circuit (2) has a function of reading out the unit pixels of the pixel unit (CCD 1) by one pixel.

Next, regarding **claim 10**, as is similarly shown above with respect to claim 1, the Takayama reference discloses a pixel defect testing method for a solid-state image pickup device (electronic camera), the image pickup device comprising a pixel unit (CCD 1) including a plurality of unit pixels that

perform photoelectric conversion, a driving circuit (driving system circuit 2) for driving the pixel unit (CCD 1) to control output of a pixel output signal, and an output signal processing circuit (signal processing section 42) for subjecting the pixel output signal outputted from the pixel unit according to the driving of the driving circuit to predetermined signal processing, and outputting the resulting pixel output signal. Again, while Takayama does not explicitly disclose a timing generator for supplying a predetermined operating pulse to the driving circuit and the output signal processing circuit, it is inherent that some sort of timing pulse is sent to each of these circuits from control circuit 8 so as to operate the circuits at the correct time. Further, Takayama teaches that the pixel output signal outputted from the pixel unit (CCD 1) according to the driving of the driving circuit (2) is captured independently of the output signal processing circuit (42) (as shown in Fig. 14), and a pixel defect is determined by comparing the pixel output signal with a predetermined reference signal (stored in memory 9), the defect test on pixel output signal outputted from the pixel unit being performed on the basis of an operating pulse. Please refer to Fig. 14, Col. 10, Line 62 – Col. 11, Line 44, and Col. 24, Lines 4-23.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4, 5, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama et al. (U.S. Pat. 6,683,643) in view of Oda (U.S. Pat. 6,340,989).

Considering **claim 4**, the limitations of claim 1 are taught above, but the Takayama reference fails to teach that the driving circuit has a function of performing both a normal reading operation for selecting

a pixel at a normal speed and a high-speed reading operation for selecting a pixel at a higher speed than that under the normal reading operation. However, the Oda reference teaches a solid state imaging device having a pixel unit (CCD 4) and a driving circuit (vertical driver 16 and horizontal driver 17), wherein the driving circuit has a function of performing a normal reading operation (in "shoot mode") for selecting a pixel at a normal speed, and a high-speed reading operation (in "monitor mode") for selecting a pixel at a higher speed than that under the normal reading operation (See Fig. 1 and Col. 3, Line 52 – Col. 5, Line 12). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have included the various reading operation modes of Oda with the driving circuit control of Takayama because performing certain readout operations at a high speed allows for less delay in normal image capture operations, thus making it more likely that the desired scene will be captured.

As for **Claim 5**, Takayama in view of Oda teaches the limitations of claim 4 above, and the Oda reference further discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67.

In regard to **claim 11**, the limitations of claim 10 are taught above by Takayama, and as is similarly taught above with regard to claim 5, the Oda reference further discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67.

Claims 6-9, 12, and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama et al. (U.S. Pat. 6,683,643) in view of Oda (U.S. Pat. 6,340,989) further in view of Kidono et al. (U.S. Pat. 6,970,193).

Next, regarding **claim 6**, the limitations of claim 1 are once again taught above by Takayama, and and Col. 10, Lines 62-67 of Takayama also discloses that the driving circuit (2) has a function of reading out the unit pixels of the pixel unit (CCD 1) by one pixel. However, the Takayama reference fails to

teach that the driving circuit further performs a multi-pixel reading operation for selecting more pixels than that under a normal reading operation (i.e. all pixels read out of the pixel unit), while the Oda reference only discloses a high-speed readout of unit pixels from the pixel unit, not specifically multi-pixel readout. However, the Kidono reference teaches a solid state image pickup device that has a normal reading operation (normal drive mode) for reading out each (one) pixel, and a multi-pixel reading operation (n-addition mode) for selecting more pixels than that under the normal drive mode (where n is the number of pixels greater than 1) (See Col. 3, Lines 1-8, Col. 3, Line 59 – Col. 4, Line 31, and Fig. 1). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono with the driving circuit of Takayama in view of Oda. One would have been motivated to do so because by using a multi-pixel reading operation, the readout from the pixel unit is done at a higher speed than that of a normal readout operation, thus lowering processing time during non-image capture operations (See Kidono Col. 1, Lines 51-64).

In regard to **claim 7**, the limitations of claim 6 are taught above, and as is similarly shown above with respect to claim 5, the Oda reference further discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67. While the high-speed reading operation of Oda is not a multi-pixel reading operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono with the high-speed reading operation in a time of testing the unit pixel for a defect, as taught by Oda. One would have been motivated to do so because by choosing multiple pixels to be read out as opposed to a single pixel, the reading operation of the pixel unit would be much faster and therefore processing time during defect testing would be greatly reduced, as would similarly be shown with an increase in the readout speed.

As for **claim 8**, the Takayama reference teaches the limitations of claim 1 above, and Takayama Col. 10, Lines 62-67 of Takayama also discloses that the driving circuit (2) has a function of reading out

the unit pixels of the pixel unit (CCD 1) by one pixel. What Takayama does not disclose is that there is a multi-pixel high-speed reading operation for selecting more pixels than under the normal reading operation at a higher speed than that under the normal reading operation. However, as is similarly discussed above with respect to claim 6, the Kidono reference teaches a solid state image pickup device that has a normal reading operation (normal drive mode) for reading out each (one) pixel, and a multi-pixel reading operation (n-addition mode) for selecting more pixels than that under the normal drive mode (where n is the number of pixels greater than 1) (See Col. 3, Lines 1-8, Col. 3, Line 59 – Col. 4, Line 31, and Fig. 1). Also, while the high-speed reading operation of Oda is not a multi-pixel reading operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono with the high-speed reading operation in a time of testing the unit pixel for a defect, as taught by Oda. One would have been motivated to do so because by choosing multiple pixels to be read out as opposed to a single pixel, the reading operation of the pixel unit would be much faster and therefore processing time during defect testing would be greatly reduced, as would similarly be shown with an increase in the readout speed.

Considering **claim 9**, the limitations of claim 8 are taught above, and as is similarly shown above with respect to claim 5, the Oda reference further discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67. While the high-speed reading operation of Oda is not a multi-pixel reading operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono with the high-speed reading operation in a time of testing the unit pixel for a defect, as taught by Oda.

In regard to **claim 12**, the limitations of claim 10 are taught above by Takayama, and the Oda reference discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67. While the high-

speed reading operation of Oda is not a multi-pixel reading operation (i.e. the drive circuit does not select more pixels than at a time of normal output), it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono (See Col. 3, Lines 1-8, Col. 3, Line 59 – Col. 4, Line 31) with the high-speed reading operation in a time of testing the unit pixel for a defect, as taught by Oda. One would have been motivated to do so because by choosing multiple pixels to be read out as opposed to a single pixel, the reading operation of the pixel unit would be much faster and therefore processing time during defect testing would be greatly reduced, as would similarly be shown with an increase in the readout speed.

Similarly, considering **claim 13**, the limitations of claim 10 are taught above, and the Oda reference further discloses that the driving circuit (16 and 17) selects a high-speed reading operation (monitor mode) in a time of testing the pixel unit (CCD 4) for a defect in Col. 7, Lines 57-67. While the high-speed reading operation of Oda is not a multi-pixel reading operation, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated the multi-pixel reading operation of Kidono with the high-speed reading operation in a time of testing the unit pixel for a defect, as taught by Oda.

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takayama et al. (U.S. Pat. 6,683,643).

Finally, regarding **claim 14**, the Takayama reference discloses the limitations of claim 10 above, but Takayama fails to teach the pixel defect testing method wherein, in parallel with a defect test on the pixel unit, a predetermined test signal is inputted to other circuits mounted on an identical chip (i.e. CDS circuits, A/D circuits, etc.) and a defect test on the other circuits is performed. However, Official Notice is hereby taken that it would have been obvious and well-known to one of ordinary skill in the art to have incorporated a defect test on other circuits on the chip in parallel with a defect test on the pixel unit (CCD,

etc.). One would have been motivated to do so because by testing circuitry components individually, errors or defects from other connected circuitry will not effect the defect testing and detection of a specific component, thus allowing for greater sensitivity in defect testing of components other than the pixel unit.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

Shimuru (U.S. Pat. 6,307,393)

Lee et al. (U.S. Pat. 6,707,493)

Kubo et al. (U.S. Pat. 7,106,371)

Kim (U.S. Pub. 2002/0080253)

Itani (U.S. Pat. 6,707,492)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory V. Madden whose telephone number is 571-272-8128. The examiner can normally be reached on Mon.-Fri. 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc Yen Vu can be reached on 571-272-7320. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Gregory Madden
October 4, 2006

NGOC-YEN VU
SUPERVISORY PATENT EXAMINER